

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



licant:

**CARLSON** 

Examiner:

Unknown

10/813,568

Group Art Unit:

1645

Filed:

March 29, 2004

Docket:

14095.1USI1

Confirmation No.:

4101

Customer No.:

23552

Due Date:

June 27, 2004

Title:

ARTIFICIAL RECEPTORS, BUILDING BLOCKS, AND METHODS

## **CERTIFICATE UNDER 37 CFR 1.8:**

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on June 22, 2004.

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450 PATENT TRADEMARK OFFICE

Sir:

We are transmitting herewith the attached:

Transmittal Sheet in duplicate containing Certificate of Mailing

Information Disclosure Statement, Form 1449, 9 Reference(s), Copy of International Search Report

Return postcard

Please consider this a PETITION FOR EXTENSION OF TIME for a sufficient number of months to enter these papers or any future reply, if appropriate. Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. A duplicate of this sheet is enclosed.

Respectfully submitted,

MERCHANT & GOULD P.C. P.O. Box 2903 Minneapolis, Minnesota 55402-0903 (612) 332-5300

Mark T. Skoog Reg. No. 40,178

MTS:sab

JUN 2 1 700 E TO 10/813,568

0/813,568 PATENT

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Name: Sheryl A. Boerboo

## **INFORMATION DISCLOSURE STATEMENT (37 C.F.R. § 1.97(b))**

Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450

Dear Sir:

With regard to the above-identified application, the items of information listed on the enclosed Form 1449 are brought to the attention of the Examiner.

This statement should be considered because it is submitted within three months of the filing date of the above-identified application, which is not an application under 37 C.F.R. § 1.53(d). Accordingly, no fee is due for consideration of the items listed on the enclosed Form 1449.

Because this application was filed after June 30, 2003, copies have been provided only for the foreign patent documents or "Other documents" listed on the enclosed Form 1449 that have not previously been cited by or submitted to the U.S. Patent and Trademark Office in parent application, U.S. Serial No. 10/244,727 filed on September 16, 2002.

No representation is made that a reference is "prior art" within the meaning of 35 U.S.C. §§ 102 and 103 and Applicants reserve the right, pursuant to 37 C.F.R. § 1.131 or otherwise, to establish that the reference(s) are not "prior art." Moreover, Applicants do not represent that a

reference has been thoroughly reviewed or that any relevance of any portion of a reference is intended.

Consideration of the items listed is respectfully requested. Pursuant to the provisions of M.P.E.P. 609, it is requested that the Examiner return a copy of the attached Form 1449, marked as being considered and initialed by the Examiner, to the undersigned with the next official communication.

Please charge any additional fees or credit any overpayment to Deposit Account No. 13-2725.

Respectfully submitted,

MERCHANT & GOULD P.C. P.O. Box 2903 Minneapolis, Minnesota 55402-0903 (612) 332-5300

Date: - June 22, 2004

Mark T. Skoog

Reg. No. 40,178 MTS:sab

PATENT TRADEMARK OFFICE

ORM	<b>1</b> 1449*
	SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

IN AN APPLICATION

(Use several sheets if necessary)

Docket Number:	
14095.1USI1	

Application Number: 10/813,568

Applicant: CARLSON

Filing Date: March 29, 2004

Group Art Unit: 1645

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L. L		Ţ	J.S. PATENT DOCUMEN	NTS		
LIPAN ER INITIAL	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	5,225,374	06/06/1993	Fare et al.	25.00		
	5,281,539	01/25/1994	Schramm			
	5,324,633	06/28/1994	Fodor et al.			
	5,475,100	12/12/1995	Hashino et al.			
	5,770,380	06/23/1998	Hamilton et al.			
	5,804,563	09/08/1998	Still et al.			
	5,942,393	08/24/1999	Nobori et al.			
	5,998,594	12/07/1999	Goodman et al.			
	6,061,636	05/09/2000	Horlbeck			
	6,096,551	08/01/2000	Barbas et al.			
	6,111,123	08/29/2000	Coucouvanis et al.			
	6,153,743	11/28/2000	Hubbell et al.			
	6,198,912 B1	01/02/2001	Chen			
	6,261,776 B1	07/17/2001	Pirrung et al.			
	6,287,765 B1	09/11/2001	Cubicciotti			
	6,297,059 B1	10/02/2001	Song et al.			
	6,316,268 B1	11/13/2001	Yang et al.			
	6,316,616 B1	11/13/2001	Jacobsen et al.			
	6,331,441 B1	12/18/2001	Balch et al.			
	6,346,413 B1	02/12/2002	Fodor et al.			
	6,419,881 B1	07/16/2002	Weinberg et al.			
	6,489,093 B1	12/03/2002	Jacobsen et al.			
- <del> </del>	2003/0104360 A1	06/05/2003	Still et al.			
	6,627,396 B1	09/30/2003	Swanson et al.			
	6,699,719 B2	03/02/2004	Yamazaki et al.			

EXAMINER	DATE CONSIDERED

Date Mailed: June 22, 2004 Sheet 2 of 5

IN AN APPLICATION	Applicant: CARLSON		
SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT	14095.1USI1	10/813,568	
FORM 1449*	Docket Number:	Application Number:	

(Use several sheets if necessary) Filing Date: March 29, 2004 Group Art Unit: 1645

		FOI	REIGN PATENT DOCUM	IENTS				
	DOCUMENT NO.	NT NO. DATE COUNTRY	CLASS	SUBCLASS	TRANSLATION			
						YES	NO	
	OTHER	DOCUMENT	S (Including Author, Title,	Date, Pertinent Pa	iges, Etc.)			
	"Various Se	arch Reports," 7	73 pages (2004)					
•		Alluri, P. et al., "Isolation of Protein Ligands from Large Peptoid Libraries", Center for Biomedical Inventions, Department of Internal Medicine and Molecular Biology, University of Texas Southwestern Medical Center						
			, "Mixed-Element Capture Aure Ligands", <u>J. Am. Chem.</u>			struction of S	ynthetic,	
			iting Site - Site Interactions 185-1188 (2001)	on Solid Support	to Generate Dimeric	Molecules,"	Organic	
		Bluhm, L. et al., "An Alternative Procedure to Screen Mixture Combinatorial Libraries for Selectors for Chiral Chromatography," <i>Analytical Chemistry</i> , Vol. 72, No. 21, pp. 5201-5205 (November 1, 2000)						
		Borchardt, A. et al., "Synthetic Receptor Binding Elucidated with an Encoded Combinatorial Library," J. Am. Chem. Soc., Vol. 116, No. 1, pp. 373-374 (1994)						
			croidal Receptors for Opioid Chem. Soc., Vol. 116, No. 17			g Using a Syn	thetic	
		Brennan, M., "Protein Interactions: Putting on the Brakes. Antibody Mimics that Bind to Protein Surface Block Protein-Protein Interactions," C & EN, pp. 65-66, 69 (January 22, 2001)						
		Breslow, R. et al., "Sequence Selective Binding of Peptides by Artificial Receptors in Aqueous Solution," J. Am. Chem. Soc., Vol. 120, No. 14, pp. 3536-3537 (1998)						
		Bunin, B. et al., "A General and Expedient Method for the Solid-Phase Synthesis of 1,4-Benzodiazepine Derivatives," J. Am. Chem. Soc., Vol. 114, pp. 10997-10998 (1992)						
		Burns, C. et al., "Components for Tethered Bilayer Membranes: Synthesis of Hydrophilically Substituted Phytanol Derivatives", Aust. J. Chem., Vol. 54, pp. 431-438 (2001)						
	CARA pres	CARA presented September 10, 2003						
		Cha, X. et al., "Molecular Recognition of Aqueous Dipeptides by Noncovalently Aligned Oligoglycine Units at the Air/Water Interface," J. Am. Chem. Soc., Vol. 117, No. 48, pp. 11833-11838 (1995)						
		Chambers, R. et al., "High-level generation of polyclonal antibodies by genetic immunization", Nature Biotechnology, 21(9):1088-1092 (September 2003)						
		Cheng, Y. et al., "Sequence-Selective Peptide Binding with a Peptido-A,B-trans-steroidal Receptor Selected from an Encoded Combinatorial Receptor Library," J. Am. Chem. Soc., Vol. 118, No. 7, pp. 1813-1814 (1996)						
		Cousins, G. et al., "Molecular Evolution: Dynamic Combinatorial Libraries, Autocatalytic Networks and the Quest for Molecular Function," Current Opinion in Chemical Biology, Vol. 4, pp. 270-279 (2000)						

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Date Mailed: June 22, 2004 Sheet 3 of 5

FORM 1449* SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT	Docket Number: 14095.1USI1	Application Number: 10/813,568
IN AN APPLICATION	Applicant: CARLSON	
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•	
	Deng, Q. et al., "Retention and Separation of Adenosine and Analogues by Affinity Chromatography with an Aptamer Stationary Phaase," <i>Anal. Chem.</i> , Vol. 73, No. 22, pp. 5415-5421 (November 15, 2001)
	Fiammengo, R. et al., "Synthetic Self-Assembled Models with Biomimetic Functions," Current Opinion in Chemical Biology, Vol. 5, pp. 660-673 (2001)
	Francis, M. et al., "Combinatorial Approach to the Discovery of Novel Coordination Complexes", J. Am. Chem. Soc., Vol. 37, No. 118, pp. 8983-8984 (1996)
	Goodman, M. et al., "A Combinatorial Library Approach to Artificial Receptor Design", J. Am. Chem. Soc., Vol. 117, No. 46, pp. 11610-11611 (1995)
	Halter, M. et al., "Engineered Lipids That Cross-Link the Inner and Outer Leaflets of Lipid Bilayers", <i>Langmuir</i> , Vol. 20, No. 6, pp. 2416-2423 (2004)
	Hamilton, A. et al., "Model Systems Artificial Models of Protein Function," Current Opinion in Chemical Biology, Vol. 5, pp. 623-625 (2001)
	Hamuro, Y. et al., "A Calixarene with Four Peptide Loops: An Antibody Mimic for Recognition of Protein Surfaces," Angew. Chem. Int. Ed. Engl., Vol. 36, No. 23, pp. 2680-2683 (1997)
	Hamuro, Y. et al., "Functionalized Oligoanthranilamides: Modular and Conformationally Controlled Scaffolds," Bioorganic & Medicinal Chemistry, Vol. 9, pp. 2355-2363 (2001)
	Haupt, K. et al., "Molecularly Imprinted Polymers and Their Use in Biomimetic Sensors," <i>Chem. Rev.</i> , Vol. 100, No. 7, pp. 2495-2504 (2000)
	Hergenrother, P. et al., "Small-Molecule Microarrays: Covalent Attachment and Screening of Alcohol-Containing Small Molecules on Glass Slides," J. Am. Chem. Soc., Vol. 122, No. 32, pp. 7849-7850 (2000)
	Hubbard, R. et al., "Highly Substituted ter-Cyclopentanes as Receptors for Lipid A," J. Am. Chem. Soc., Vol. 123, No. 24, pp. 5810-5811 (2001)
	Huc, I. et al., "Virtual Combinatorial Libraries: Dynamic Generation of Molecular and Supramolecular Diversity by Self-Assembly," <i>Proc. Natl. Acad. Sci. USA</i> , Vol. 94, pp. 2106-2110 (March 1997)
	Jain, R. et al., "Protein Surface Recognition by Synthetic Receptors Based on a Tetraphenylporphyrin Scaffold," Organic Letters, Vol. 2, No. 12, pp. 1721-1723 (2000)
	Kasher, R. et al., "Design and Synthesis of Peptides that Bind α-Bungarotoxin with High Affinity," <i>Chemistry &amp; Biology</i> , Vol. 8, pp. 147-155 (2001)
	Kick, E. et al., "Structure-Based Design and Combinatorial Chemistry Yield Low Nanomolar Inhibitors of Cathepsin D," Chemistry & Biology, Vol. 4, No. 4, pp. 297-307 (April 1997)
	Kodadek, T., "Development of Protein-Detecting Microarrays and Related Devices," TRENDS in Biochemical Sciences, Vol. 27, No. 6, pp. 295-300 (June 2002)
	Kodadek, T., "Protein microarrays: prospects and problems", Chemistry & Biology, 8:105-115 (2001)
	Lam, K. et al., "The 'One-Bead-One Compound' Combinatorial Library Method," <i>Chemical Reviews</i> , Vol. 97, No. 2, pp. 411-448 (1997)
	Lee, D. et al., "Pairwise Use of Complexity-Generating Reactions in Diversity-Oriented Organic Synthesis," Organic Letters, Vol. 2, No. 5, pp. 709-712 (2000)
	Lehn, J et al., "Dynamic Combinatorial Chemistry," Science, Vol. 291, pp. 2331-2332 (March 23, 2001)

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Leigh, D., "Summing Up Ligand Binding Interactions", <i>Chemistry &amp; Biology</i> , Vol. 10, pp. 1143-1144 (December, 2003)
Li, S. et al., "Artificial Receptor-Facilitated Solid-Phase Microextraction of Barbiturates," Anal. Chem., Vol. 71, No. 11, pp. 2146-2151 (June 1, 1999)
MacBeath, G. et al., "Printing Proteins as Microarrays for High-Throughput Function Determination," <i>Science</i> , Vol. 289, pp. 1760-1763 (September 8, 2000)
MacBeath, G. et al., "Printing Small Molecules as Microarrays and Detecting Protein - Ligand Interactions en Masse," J. Am. Chem. Soc., Vol. 121, No. 34, pp. 7967-7968 (1999)
Malin, R. et al., "Identification of Technetium-99m Binding Peptides Using Combinatorial Cellulose-Bound Peptide Libraries", J. Am. Chem. Soc., Vol. 117, No. 47, pp. 118821-118822 (1995)
Maly, D. et al., "Combinatorial Target-Guided Ligand Assembly: Identification of Potent Subtype-Selective c-Src Inhibitors," PNAS, Vol. 97, No. 6, pp. 2419-2424 (March 14, 2000)
McDonald, D. et al., "Application of Free Energy Perturbation Calculations to the Enantioselective Binding of Peptides to C <sub>3</sub> -Symmetric Synthetic Receptors," <i>J. Am. Chem. Soc.</i> , Vol. 118, No. 8, pp. 2073-2077 (1996)
Moore, J. et al., "'Masterpiece' Copolymer Sequences by Targeted Equilibruim-Shifting," Organic Letters, Vol. 2, No. 7, pp. 915-918 (2000)
Mosbach, K. et al., "Generation of New Enzyme Inhibitors Using Imprinted Binding Sites: The Anti-Idiotypic Approach, a Step Toward the Next Generation of Molecular Imprinting," J. Am. Chem. Soc., Vol. 123, No. 49, pp. 12420-12421 (2001)
Ogoshi, H. et al., "Novel Approaches to Molecular Recognition Using Porphyrins," Current Opinion in Chemical Biology, Vol. 3, pp. 736-739 (1999)
Olivos, H. et al., "Microwave-Assisted Solid-Phase Synthesis of Peptoids", Organic Letters, 4(23):4057-4059 (2002)
Olivos, H. et al., "Quantum Dots as a Visual Aid for Screening Bead-Bound Combinatorial Libraries", Center for Biomedical inventions and the Departments of Internal Medicine and Molecular Biology, University of Texas Southwestern Medical Center, Dallas, Texas
Opatz, T. et al., "A Selectively Deprotectable Triazacyclophane Scaffold for the Construction of Artificial Receptors," Organic Letters, Vol. 3, No. 22, pp. 3499-3502 (2001)
Oprea, T. et al., "Chemography: The Art of Navigating in Chemical Space," J. Comb. Chem., Vol. 3, No. 2, pp. 157-166 (2001)
Park, H. et al., "Protein Surface Recognition by Synthetic Receptors: A Route to Novel Submicromolar Inhibitors for α-Chymotrypsin," J. Am. Chem. Soc., Vol. 121, No. 1, pp. 8-13 (1999)
Pattarawarapan, M. et al., "A Linker Scaffold to Present Dimers of Pharmacophores Prepared by Solid-Phase Syntheses," <i>Angew. Chem. Int. Ed.</i> , Vol. 39, No. 23, pp. 4299-4301 (2000)
Peczuh, M. et al., "Peptide and Protein Recognition by Designed Molecules," <i>Chem. Rev.</i> , Vol. 100, No. 7, pp. 2479-2494 (2000)
Pirrung, M., "Spatially Addressable Combinatorial Libraries," Chemical Reviews, Vol. 97, No. 2, pp. 473-488 (1997)
Quaglia, M. et al., "Target Analogue Imprinted Polymers with Affinity for Folic Acid and Related Compounds," J. Am. Chem. Soc., Vol. 123, No. 10, pp. 2146-2154 (2001)

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	Ramström, O. et al., "Synthesis and Catalysis by Molecularly Imprinted Materials," Current Opinion in Chemical Biology, Vol. 3, pp. 759-764 (1999)
	Sasaki, D., "Control of Membrane Structure and Organization Through Chemical Recognition", Cell Biochemistry and Biophysics, Vo. 39, pp. 145-161 (2003)
	Shao, Y. et al., "Sequence-Selective Receptors of Peptides, A Simple Molecular Design for Construction of Large Combinatorial Libraries of Receptors," <i>J. Org. Chem.</i> Vol. 61, No.18, pp. 6086-6087 (1996)
-	Shellenberger, K. et al., "Effect of Molecular Scale Roughness of Glass Beads on Colloidal and Bacterial Deposition," Environ. Sci. Technol., Vol. 36, No. 2, pp. 184-189 (2002)
	Shinoda, S. et al., "Ester-Armed Cyclens Having Quadruplicated Helical Geometry: Remarkably Stable and Selective Encapsulation of Na <sup>+</sup> Ion," <i>J. Org. Chem.</i> , Vol. 66, No. 18, pp. 6104-6108 (2001)
	Song, X, "Direct, Ultrasensitive, and Selective Optical Detection of Protein Toxins Using Multivalent Interactions", Anal. Chem., Vol. 71, No. 11, pp. 2097-2107 (June 1, 1999)
	Sternson, S. et al., "Split-Pool Synthesis of 1,3-Dioxanes Leading to Arrayed Stock Solutions of Single Compounds Sufficient for Multiple Phenotypic and Protein-Binding Assays," J. Am. Chem. Soc., Vol. 123, No. 8, pp. 1740-1747 (2001)
	Wang, Y. et al., "Identification of Chiral Selectors from a 200-Member Parallel Combinatorial Library," Anal. Chem., Vol. 72, No. 21, pp. 5459-5465 (November 1, 2000)
	Way, J., "Covalent Modification as a Strategy to Block Protein-Protein Interactions with Small-Molecule Drugs," Current Opinion in Chemical Biology, Vol. 4, pp. 40-46 (2000)
	Winssinger, N. et al., "From Split-Pool Libraries to Spatially Addressable Microarrays and its Application to Functional Proteomic Profiling," <i>Angew. Chem. Int. Ed.</i> , Vol. 40, No. 17, pp. 3152-3155 (2001)
	Xu, R. et al., "Combinatorial Library Approach for the Identification of Synthetic Receptors Targeting Vancomycin-Resistant Bacteria," J. Am. Chem. Soc., Vol. 121, No. 20, pp. 4898-4899 (1999)
	Yan, B. et al., "Crucial Factors Regulating Site Interactions in Resin Supports Determined by Single Bead IR," J. Org. Chem., Vol. 63, No. 1, pp. 55-58 (1998)
	Zhu, H. et al., "Protein Arrays and Microarrays," Current Opinion in Chemical Biology, Vol. 5, pp. 40-45 (2001)
	Zhuravlev, N. et al., "Surface Coverages of Bonded-Phase Ligands on Silica: A Computational Study," Anal. Chem., Vol. 73, No. 16, pp. 4006-4011 (August 15, 2001)
- "	Zimmerman, S. et al., "Model Systems," Current Opinion in Chemical Biology, Vol. 3, pp. 711-713 (1999)
	Copy of International Search Report dated May 27, 2004

23552
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